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ROMANIA FINAL REPORT

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## ACRONYMS

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APM	Romanian environmental protection agency
C4EP	Central and East European Environment and Economic Policy project
CEE	Central and Eastern Europe
CTO	Contract technical officer
EAP	Environmental Action Programme
EAPS	Environmental Action Programme Support
EHP	Environmental Health Project
EIB	European Investment Bank
EMS	Environmental management system
EPA	Environmental protection agency
EPIQ	Environmental Policy Indefinite Quantity Contract
EU	European Union
GEF	Global Environment Facility
HIID	Harvard Institute for International Development
ICIM	Institute for Environmental Engineering
INA	Institutional needs assessment
IPPC	Integrated Pollution Prevention and Control directive
IPRONEF	Institute for Non-Ferrous Metallurgy (formerly IMNR)
ISPA	Instrument for Structural Policies for Pre-Accession
JICA	Japan International Cooperation Agency
KAP	Knowledge, attitudes, and practice
LEAP	Local Environmental Action Plan
LERP	Lead exposure reduction program
MoWFEP	Ministry of Waters, Forests, and Environmental Protection
MUDP	Municipal Utilities Development Project
NEAP	National Environmental Action Plan
NGO	Nongovernmental organization
NIS	Newly Independent States
OAR	Office of the AID Representative
OHS	Occupational health and safety

QA/QC	Quality assurance/quality control
SO	Strategic Objective
USAID	United States Agency for International Development
WEC	World Environment Center
WWTP	Wastewater treatment plant

# EAPS Romania Final Report

## I. Introduction

### A. Environmental Action Programme Support (EAPS) Background and Goals

As Central and Eastern Europe (CEE) and the Newly Independent States (NIS) make the transition to open markets and democratic institutions, they face costly health and financial burdens from pervasive environmental contamination and mismanagement of natural resources. In an attempt to address particularly harmful environmental problems, environmental ministers from Eastern and Western Europe developed and adopted the Environmental Action Programme in Lucerne, Switzerland, in April 1993. The program established a partnership between CEE, NIS, and Western countries in which CEE and NIS countries undertake policy and institutional reforms, and Western governments and international financial institutions assist with these reforms and support the high-priority projects created to advance them.

Chemonics implemented the USAID Environmental Action Programme Support project (EAPS) in Central and Eastern Europe to support the Lucerne strategy and continue earlier related USAID activities to improve environmental management and economic development in the region. EAPS helped national and local governments identify, prioritize, and package proposals for environmental improvements and strengthen the lending and financial management practices of national environmental funds.

EAPS was launched in March 1995 for a five-year period. In March 2000, the EAPS contract was extended without provision of additional financial resources (no-cost extension) to March 2001. EAPS has worked in Bulgaria, the Czech Republic, Lithuania, Macedonia, Poland, Romania, Slovakia, and Russia.

EAPS primarily provided technical assistance for project selection and development and financial investment packaging. The project also provided assistance in institutional evaluation, capacity building, training, information dissemination, and work related to assessing and financing environmental projects, strengthening environmental funds, and improving environmental regulation and compliance. In addition, EAPS provided grant assistance for equipment to upgrade environmental performance.

EAPS was implemented by Chemonics International Inc. and a consortium of specialist subcontractors, including Dames & Moore, Environomics, Ernst & Young LLP, Harvard Institute for International Development, Industrial Economics Inc., Institute for Sustainable Communities, and K&M Engineering and Consulting Corporation. The EAPS home office, located at Chemonics International, provided overall guidance, supervision, and support to EAPS field offices and country programs, reported to and maintained close collaboration with the CTO at USAID/Washington, and carried out EAPS regional initiatives.

## **B. EAPS in Romania**

### **B1. Overview**

EAPS goals and strategies in Romania evolved from the findings of two earlier USAID-funded projects: the World Environment Center (WEC) and Environmental Health Project (EHP). These two projects initiated extensive work in Zlatna, one of the Romanian “hot spots” of intense pollution, following a request by the Romanian Ministry of Environment.

EAPS carried out its work in Romania in three phases, each with specific activities and having a particular focus:

- Phase 1 (1995-1998) focused on support to non-ferrous smelting industries to improve operations and environmental performances, including occupational health and safety (OHS).
- Phase 2 (1999) built on the findings of an Institutional Needs Assessment conducted by EAPS in late 1997 and early 1998, focusing on support for institutional strengthening of Romanian environmental protection agencies (EPAs).
- Phase 3 (2000) focused on environmental project financing by (1) supporting the efforts of a Romanian municipality, Braila, to access European Union (EU) funds for environmental investment provided under the Instrument for Structural Policies for Pre-Accession (ISPA) program, and (2) compiling a directory of environmental financing sources.

Annex A presents a summary of Romanian projects assisted by EAPS, and Annex B provides a list of EAPS Romania publications. USAID invested \$4.39 million in the EAPS Romania program over its nearly six-year life span.

### **B2. Goals**

Throughout its life, the EAPS project had four main goals:

- Reduce environmental health risks and improve environmental compliance.
- Strengthen local institutions and mobilize local resources and expertise within the public and private sector.
- Facilitate the financing of high-priority pollution prevention and abatement projects.
- Increase the role of local governments in the environmental decision making-process regarding issues affecting their communities.

### **B3. Strategic Objectives**

In FY 1997, USAID/Romania’s environmental activities, including EAPS, were reported under SO 3.3, Reduced Exposure to Contaminants in Severely Polluted Areas. Beginning in FY 1998, USAID/Romania adopted SO 1.6, Increased Environmental Management Capacity to Promote Sustainable Economic Growth, to report environmental activities.

#### **B4. Performance Objectives**

EAPS Romania performance objectives were:

- Facilitate environmental investment and privatization of non-ferrous smelters by making managers of Romanian non-ferrous smelting industries and Romanian consultants aware of the latest technologies.
- Initiate a framework for battery recycling in Romania.
- Implement lead exposure reduction plans by targeted non-ferrous metal processing industries.
- Reduce environmental pollution by installing specific equipment.
- Facilitate the adoption of up-to-date, low-cost environmental enforcement procedures by the Romanian government.
- Enhance communications among Romanian EPAs, and between EPAs and the Ministry of Waters, Forests, and Environment.
- Ensure access to a 45 million euro ISPA grant for environmental investment in Braila to reduce environmental pollution and improve the environmental health status of the local population.

#### **B5. EAPS Approach to Providing Assistance**

The EAPS approach to providing assistance was based on maximizing the use of local resources and ensuring continuous, close cooperation with the institutions targeted for assistance, as well as with the central and local authorities.

EAPS aimed to utilize and expand local expertise and further develop existing skills and resources under the supervision and with the support of the EAPS field office and expatriate experts. Representatives of the institutions targeted for assistance were consulted on all phases of the work, beginning with the development of activity work plans. The relevant ministries and local governments were continuously consulted on the development of activities and were kept informed of the results. They were also given the opportunity to comment on the intermediate and final results, and their suggestions were implemented whenever possible.

#### **B6. EAPS Operational Management**

EAPS was managed through Chemonics International's Washington, D.C., home office and the project field office in Bucharest. The home office provided supervision, while the field office was responsible for day-to-day operations and management.

The Bucharest field office was staffed according to project activity level, as follows:

- 1996: Two environmental technical advisors.
- 1997-1998: Two environmental technical advisors and one field administrator.
- 1999: One expatriate chief of party, two environmental technical advisors, one field administrator, and one receptionist.

- 2000-2001: One local country manager, one office manager, and one assistant office manager.
- Short term, part-time staff, such as translators and local consultants, were hired on an as-needed basis.

One of the environmental technical advisors managed the local subcontractors. Both environmental technical advisors liaised with project partners. The field office, generally managed and staffed by local employees, participated in the selection of projects, prepared assistance plans, budgets, and subcontractor scopes of work, and managed project development. The environmental technical advisors actively participated in project activities, together with Romanian subcontractors and expatriate experts.

The chief of party and country manager oversaw day-to-day EAPS Romania activities, providing essential hands-on management. The office manager, kept the books for the field office, liaised with banks and service suppliers, managed procurement, organized logistics for conferences and seminars, and filed personnel, accounting, and other documents. The assistant office manager, was responsible for preparing and updating the contacts database, filing daily communications with the home office and others, making logistical arrangements for staff field trips and expatriate field visits, preparation and mailing of documents, and other similar activities.

## **II. Increased Sustainability of Targeted Industries**

### **A. Initial Program Focus and Design: 1995-1998**

EAPS in Romania was a versatile tool that enabled USAID to respond to local requests for specific assistance. Activities were adapted to suit the objectives of the Office of the AID Representative (OAR).

In the initial phase, EAPS complemented the work of USAID's EHP project in Zlatna, one of the Romanian environmental pollution hot spots. EHP had already developed community lead exposure programs in the area. However, there was increased pressure on USAID from the local and central government for assistance to the greatest source of local health hazard: Ampellum copper smelter. Later, following a request by the Ministry of Industries, USAID/Romania asked EAPS to extend assistance to a second, larger copper smelter: Phoenix in Baia Mare.

The project helped these two copper smelters (Ampellum and Phoenix) implement short-term, low-cost measures to improve operations and reduce environmental pollution. They were also advised and supported in the preparation of long-term environmental investment plans.

At the end of 1995, a copper business tour to the USA was organized for copper smelter managers, specialists of the Romanian Institute for Non-Ferrous Metallurgy, and the Ministry of Industries. The objective was to support decision-making by Romanian managers in selecting copper smelter refurbishment options for future development. The tour aimed to demonstrate the latest technologies available in the copper smelting industry and to facilitate direct contacts between U.S. and Romanian industry specialists.



Participants described the tour as extremely useful. Subjects discussed included process management, costs, process efficiency, environmental enforcement, the role of trade unions, recycling and byproducts, and occupational health and safety.

Phoenix was privatized in 1999. While EAPS cannot claim full credit for the deal, the company's credible development strategy, based on EAPS assistance, certainly facilitated closure.

Early in 1996, USAID/Romania asked EAPS and EHP to design a framework for an integrated country environmental program. Starting from this framework, work plans for assistance covering the 1996-1997 period were prepared for the following non-ferrous metal industries: Ampellum (Zlatna) and Phoenix (Baia Mare) copper smelters; Romplumb (Baia Mare) lead smelter; and Rombat (Bistrita), lead-acid battery producer. The work plans targeted improvement of existing processes by implementing waste minimization techniques; improved pollution prevention; optimizing the operation of existing equipment, procurement of new equipment, and equipment modernization; initiation of recycling techniques and procedures; product diversification; and improvement of OHS practices through technical assistance, training, and equipment procurement.

In 1996, EAPS assisted all the targeted industries with OHS training and studies for process improvement and product diversification. At the end of 1996, a lead smelting and lead recycling study tour to the USA was organized. Romanian participants included representatives of the two local lead smelters, the two lead-acid battery manufacturers, the Institute for Non-Ferrous Metallurgy, and the Ministry of Industries.

Early in 1997, USAID/Romania requested discontinuation of the Romania work plan pending revision of the OAR strategy. The only activities authorized were related to OHS, and to process improvement and environmental pollution mitigation at Rombat lead-acid battery manufacturer. EAPS provided support in project identification and project screening for the World Bank's Pollution Abatement Project. USAID/Romania also commissioned EAPS to conduct an Institutional Needs Assessment Study for Romanian EPAs. This study, finalized in early 1998, was used by other donors, such as European Union Phare and the World Bank, to develop new activities. The study laid the foundation for development of the EAPS work plan for the next period. Also during this period, EAPS Romania staff provided significant assistance to OAR in the development of a new strategy for Romania.

In 1998, OHS concluded with a follow-up workshop in which the participants in the lead study tour presented their achievements in developing and implementing formal Lead Exposure Reduction Plans. Pollution prevention equipment was procured for Rombat partly financed by USAID and partly co-financed by USAID and Rombat. The equipment was delivered to Rombat, which installed it and began operation. A Battery Recycling Prefeasibility Study was conducted and disseminated to interested parties, including central government, private, and state-owned companies and various professional and trade associations. The study was used by some industries to attract investors. Also, the Harvard Institute for International Development (HIID) used the results of the study to design economic instruments to encourage battery recycling.

EAPS made extensive use of local capabilities to implement its activities. Contracts were signed with Romanian consulting institutions, such as the Institute for Non-Ferrous Metallurgy, Electroproiect, Trend, and the Center for Medical Research, as well as Romanian independent consultants. Some of the consultants were previously trained by the USAID-funded EHP project.

## **B. Summary of Initial EAPS Activities**

### **B1. Mitigation of Industrial Pollution – Major Achievements**

Rombat, lead-acid battery producer:

- Improved operation of wastewater treatment plant by separating waste flows in the production shops and through better maintenance and operation.
- Turned wastewater treatment plant (WWTP) sludge from a waste product to be disposed of in a landfill into a saleable product following installation of a USAID/EAPS-supplied filter press.
- Reduced sulfuric acid spillage by approximately 50 tons/year.
- Reduced the air pollution by sulfuric acid mist generated in the battery-charging area; improved charging conditions following installation of an acid mist separator co-financed by USAID/EAPS and Rombat.
- Documented savings of \$12,350 for six months in 1998.
- Carried out prefeasibility study on battery recycling.

Ampellum copper smelter:

- Improved furnace loading cycle, providing for uniform, continuous operation and avoiding transitory operation.
- Scheduled furnace operations according to atmospheric dispersion conditions.
- Advised on an investment strategy for end-of-pipe equipment.

Romplumb lead smelter:

- Advised on improving the quality of pellets to improve operation of downstream equipment and reduce sulfur dioxide emissions.
- Carried out prefeasibility study on battery recycling.

Phoenix copper smelter:

- Advised on future investments needed to increase smelter capacity, including pollution prevention equipment.
- Advised on product diversification and recycling of accumulated waste.

### **B2. OHS Improvement in Targeted Industries**

- Conducted knowledge, attitudes, and practices (KAP) studies conducted for Rombat, Phoenix, and Romplumb.

- Helped facilitate privatization of state-owned industries (Phoenix, Sometra) through improved OHS (reduced risk of liability).
- Implemented worker lead exposure reduction plans in Rombat, Phoenix, Romplumb, and Sometra.
- Saved an estimated \$74,000 annually.

### **III. Strengthening Romanian Environmental Agencies**

#### **A. Program Focus and Design: 1997-1999**

In 1997, USAID/Romania included environmental projects under *SO 1.6, Increased Environmental Management Capacity to Promote Sustainable Economic Growth*. Subsequently, EAPS was commissioned by the OAR to conduct an Institutional Needs Assessment of Romanian EPAs. Sometimes referred to by their Romanian acronyms, APMs, these organizations are county or *judet*-level branches of the Directorate of Environmental Inspection of the Ministry of Waters, Forests, and Environmental Protection (MoWFEP).

Data were collected during a research effort in late 1997, and the report was produced in the first quarter of 1998. Starting from this assessment, in close consultation with OAR and MoWFEP, EAPS developed several options to strengthen the capabilities of Romanian EPAs. From the options presented in the report, USAID selected two: strengthening the environmental inspection capabilities of EPAs, and strengthening air quality monitoring by EPAs. Both activities successfully demonstrated the importance of using local resources, holding continuous consultations with all stakeholders in the development of new procedures, and pilot testing before implementation at the national level.

The two activities were used to promote and facilitate EPA access to Internet and e-mail. Through donations of equipment and software, they encouraged direct communication among EPAs, and between EPAs and MoWFEP.

#### **B. Summary of Phase 2 Activities**

##### **B1. Institutional Needs Assessment for Romanian EPAs**

In November-December 1997, an EAPS team worked in the United States and Romania to collect information for an institutional needs assessment (INA) study. HIID also participated in this effort under the Central and East European Environment and Economic Policy (C4EP) project. After conducting more than 70 interviews at both the central and local levels in Romania with environmental authorities and representatives of institutions cooperating or regulated by these authorities, EAPS developed a report in January 1998 and published it six weeks later. The report covered legal, policy, financial, and economic issues, technical methods and standards, and institutional, industry, and environmental service providers. It provided recommendations to tackle all identified needs. EAPS provided OAR with copies in English and Romanian for distribution to interested parties. The report was much appreciated by the World Bank and EU Phare, who acknowledged using it in the development of their activities. Some of the recommendations of the report, such as strengthening the financial viability of EPAs, have been

implemented or are being implemented by other USAID programs, such as the Environmental Policy Indefinite Quantity Contract (EPIQ).

Following extensive consultations with USAID/Washington, USAID/Romania, and MoWFEP and based on recommendations by the INA, USAID decided that EAPS should undertake two main activities:

- Strengthening the environmental inspection capabilities of EPAs.
- Strengthening the air quality monitoring capabilities of EPAs.

## **B2. Strengthening Environmental Inspection Capabilities of Romanian EPAs**

This activity built on previous efforts of the Global Environment Facility (GEF) Transboundary Project in Oradea. GEF provided environmental inspection training to the Oradea EPA. The impact of the project was limited, because training centered on procedures that differed from the Romanian legal environmental inspection framework. Also, MoWFEP had no involvement in the project and delegated responsibility to the local EPA to coordinate with the GEF effort. EAPS hired U.S. and Romanian consultants to ensure a seamless transition between the two projects. A new inspection procedure was developed that combined Ministerial Order 1032 with U.S. Environmental Protection Agency guidelines for environmental inspection.

The project was developed in iterative steps, relying on input from stakeholder, including MoWFEP, local EPAs, regulated industries, nongovernmental organizations (NGOs), and local governments. Seven EPAs were involved, selected to match the *judets* under consideration by the World Bank for implementation of its Pollution Abatement Project. Representatives of the seven EPAs participated in successive workshops and provided input for intermediate versions of the inspection procedure designed by the EAPS team. Once the new inspection procedure was defined, it was tested in two pilot *judets*. At least 10 inspections were carried out according to the new procedure, and follow-up inspections were conducted for at least two sites in each *judet*. Inspected plants were selected to represent as many types of industries as possible. Both private and state-owned industries were included. Inspectors in the two pilot EPAs shared the results with their counterparts in the other five and with MoWFEP.

The inspection procedure was further refined and finalized. Trainers were trained to provide sustainability in implementing the new procedure. The new trainers were MoWFEP staff and consultants, including EAPS staff. In regional workshops, the newly trained trainers, coached by EAPS consultants, trained inspectors from all 42 EPAs.

The new inspection procedure enhances environmental inspections. It provides inspectors with tools for all phases of inspection (preparation/planning, inspection, and follow-up). The procedure was developed in accordance with the Integrated Pollution Prevention and Control (IPPC) EU Directive, so it supports Romania's aspirations for accession to the European Union. MoWFEP officially adopted the new environmental inspection procedure by Ministerial Order 541/2001.

The new procedure includes environmental management approaches and techniques that facilitate implementation of such systems by interested institutions. MoWFEP received positive feedback from the EPAs regarding the procedure. The efficiency of inspections increased, and

industry response was more prompt and structured. According to anecdotal information, EU consultants are also interested in learning about the procedure.

### **B3. Strengthening Air Quality Monitoring Capabilities of Romanian EPAs**

Over the past 10 years, various donors have prepared studies and strategies recommending high-cost investment in sophisticated air quality monitoring. EAPS took a different approach, recommending low-cost, practical emission inventories, a method extensively applied in the United States and Western Europe. MoWFEP specialists described these emission inventories as useful in preparing national air quality status reports for the European Union. Romanian experience was available in the Institute for Environmental Engineering (ICIM). EAPS provided expatriate assistance in planning emission inventory data collection campaigns and preparing local air quality improvement strategies.

EAPS selected the same seven EPAs that participated in the inspection project to implement the air quality monitoring project. Development of the air quality monitoring manual was an iterative process, relying on successive inputs from stakeholders: MoWFEP, EPAs, local governments, industries, and NGOs. The manual was pilot-tested in two EPAs (not the same ones that tested the inspection procedure). MoWFEP adopted the monitoring manual and emission inventories as official procedures by Ministerial Order 524/2001. Finally, EAPS provided MoWFEP with CDs containing both the inspection and air quality monitoring manuals for distribution to EPAs.

As EAPS did not have the resources to finance nationwide air monitoring training for EPA staff, MoWFEP disseminated the skills acquired in the two pilot EPAs to other EPAs by asking staff of the pilot EPAs to train others. This activity attests to the success of the project and the high importance the Romanian authorities attached to air quality monitoring.

## **IV. Leveraging Environmental Investment in Romania**

### **A. Program Focus and Design: 2000-2001**

EAPS is widely known for helping establish and strengthen national environment funds. EAPS and its USAID managers had hoped that such assistance would be its final major activity in Romania.

EAPS experience elsewhere in the region shows that at least two years are needed to provide effective assistance to a new environment fund so that it becomes a self-sustaining, transparent, efficient, effective, and dynamic institution. Unfortunately, due to repeated delays in the passage of legislation establishing a Romanian Environment Fund, it became clear at the end of 1999 that there would not be enough time remaining in the EAPS project to provide meaningful environment fund assistance. At that point, we were not even sure when the legislation would pass.

EAPS management from Chemonics and USAID collaborated to identify ways that EAPS could use its remaining time and funding to provide environmental project financing assistance. The most important criteria for effective assistance were:

- Limited EAPS funds would leverage large investments from other sources.
- A large number of environmental project proponents would benefit from this assistance.
- The assistance would respond to real and pressing needs.

Two activities were selected for the final phase of the EAPS Romania program: helping a Romanian municipality access funds from the EU's ISPA program, and developing a Directory of Sources for Financing Environmental Investments in Romania.

In preparation for the ISPA project, EAPS identified and screened several sites and types of projects. Following consultations with an EU delegation and representatives of MoWFEP and the Ministry of Public Works and Territorial Planning, and after visiting several possible project sites, EAPS selected the municipality of Braila for a wastewater infrastructure investment project.

The initiative to prepare a directory of environmental investment resources built on the success of a similar directory developed by EAPS in Poland. More than 80 sources of environmental investment were identified and contacted. Approximately 40 agreed to be included in the directory.

## **B. Summary of Phase 3 Activities**

### **B1. Application for ISPA funds for the Municipality of Braila**

ISPA supports the development of environmental and transportation infrastructure in countries scheduled for accession to the European Union. Romania is a beneficiary of ISPA, which provides a total of approximately 1 billion euros for environmental and transportation projects over six years. Romania is scheduled to receive approximately 100 million euros per year from ISPA for environmental projects. Priorities set by the Romanian government for ISPA funding are:

- Water and waste water infrastructure
- Air pollution
- Solid waste

To select a site for assistance, EAPS applied the following criteria:

- The site should be included in the list of ISPA priority projects of the Romanian government.
- The site should be located in one of the *judets* where EAPS had previously worked to build on achievements and facilitate relationship with the local EPA.
- No other donors or concessionaires would provided assistance in preparing the application for ISPA funding.
- The site should be acceptable as an ISPA candidate to the EU delegation in Romania.

Several projects in Oradea and in Cluj-Napoca were identified and screened, but none satisfied all the selection criteria. Eventually, MoWFEP, the Ministry of Public Works and Territorial Planning, and the EU delegation agreed that one of the three towns of Tulcea, Braila, and Galati would make a good candidate. All three had wastewater treatment plant feasibility studies, prepared previously by the Japan International Cooperation Agency (JICA). EAPS was asked to develop the work done by JICA. However, resources allowed for work in only one town. The only town that met the criterion of having previously participated in EAPS projects was Braila, one of the *judets* targeted for assistance with inspection and monitoring.

A start-up workshop was held in Braila on March 15, 2000. Participants included the mayor of Braila, representatives of the local water *regie autonome* (water authority), Aptercol, officials from MoWFEP and the Ministry of Public Works and Territorial Planning, consultants who had prepared feasibility studies for the targeted investments, EAPS experts, and the local press. In the following period, Romanian consultants, the expatriate financial advisor, and the EAPS Romania field office, with strong support from the EAPS home office, made intense efforts to finalize the ISPA application in time for the June 1 deadline for the 2000 round of ISPA projects.

The project includes three components: two sewerage-related components and construction of a wastewater treatment plant. Braila currently has no wastewater treatment facilities. ISPA designated the European Investment Bank (EIB) as the source of financing for its 25 percent co-finance share. ISPA also designated EIB as its overall project quality supervisor. Comments and questions received from the European Commission and EIB were addressed by the EAPS Romania field office, with support from local consultants and the expatriate financial advisor. On November 24, 2000, the ISPA Management Committee approved the Braila project. Braila was one of four projects approved out of 10 submitted. Project value is approximately 60 million euros, of which 45 million is an ISPA grant and 15 million is an EIB loan.

Following project approval, EAPS further supported Braila in negotiations with the EIB and subcontracted a local consultant to prepare bidding documents for the two sewerage project components. An expatriate consultant helped structure implementation contracts and prepare bidding documents.

At the end of 2000, USAID decided to dedicate the remaining EAPS resources to help Braila address questions raised by EIB consultants and prepare the bidding documents for some project components. Due to limited resources, EAPS was unable to finance preparation of bidding documents for construction of the wastewater treatment plant. This will be financed from ISPA technical assistance funds.

A workshop at the conclusion of the EAPS program in Romania provided for a smooth hand-off of responsibilities. Participants included representatives of the EIB, the EU delegation, USAID/Romania, Braila Local Council, Aptercol (Braila *regie autonome*), and EAPS home-office and field-office staff and consultants. Participants developed procedures and methods for continuing their work without further EAPS assistance.

## **B2. Directory of Sources for Financing Environmental Investments In Romania**

Development of the Directory of Sources for Financing Environmental Investments in Romania took approximately one year. EAPS contacted 78 possible sources of financing, including international donors, banks, leasing companies, and foundations. Of these, 40 were judged appropriate and agreed to be listed in the directory.

The directory was divided into four chapters, one for each type of financing source (international donors, banks, leasing companies, and foundations). Each chapter introduced one category of financing source, then provided a table with basic information for each institution in that category. The tables included project eligibility requirements, loan terms, typical loan size, lending history, contact information, and the like.

The directory was launched in September 2000 at a ceremony attended by the USAID/Romania representative, the mayors of four important Romanian towns, representatives of the financing institutions included in the directory, and other interested parties, such as representatives of public authorities and local utilities. More than 250 copies of the directory were distributed during the launch event.

The launch was followed by a large-scale mailing. Through cooperation with Romanian municipal, town, and commune associations and the Romanian Water Association, EAPS prepared a comprehensive database targeting local governments, local utility companies, NGOs, and other U.S.-financed projects, such as the Peace Corps. Copies were mailed or provided to interested parties who specifically requested the directory, such as the Regional Environmental Center. More than 1,800 copies were mailed in the following four months. The Romanian version of the directory is available on the MoWFEP Web site, [www.mappm.ro](http://www.mappm.ro), and an English-language version is available on the Web site of the Romanian-American Capital and Trade Development Group, [www.ractdg.ro](http://www.ractdg.ro). The EAPS field office received extremely favorable comments from recipients of the directory.

## **V. EAPS Advances in Romania**

### **A. Milestones**

Since 1994, Romania has made significant progress in environmental management. In 1995, the Environmental Framework Law was adopted. Subsequently, ministerial orders were issued regulating environmental permitting, environmental liabilities for privatization, and environmental impact assessments. Most of the environmental legal framework was developed with assistance from international donors, such as USAID. The new regulations are based on the “polluter pays” principle and use market economy approaches.

The Dutch government financed an extensive pilot project to develop an environmental action plan (EAP) for the Bacau region. One result of this project was a Local Environmental Action Plan (LEAP) for the town of Bacau.

The EU established ISPA, targeting environmental investments.



The Romanian government prepared various environmental strategies, including a national environmental action plan (NEAP), the EU accession strategy, and a strategy for utilizing ISPA resources. All these strategies are periodically reviewed and approved.

In 2000, the long-awaited Environmental Fund was established. However, this fund will not be active before the end of 2001.

Documents developed during the EAPS monitoring activity were adopted by MoWFEP and included in Ministerial Order 524/2000. The monitoring manual includes provisions supporting the development of local air quality improvement strategies.

Improvements in the municipal water sector were facilitated by two Municipal Utilities Development Projects (MUDP I and II), both co-financed by the Romanian government and the European Bank for Reconstruction and Development.

## **B. Constraints**

The following constraints limit NEAP implementation in Romania:

- Incomplete environmental legal framework
- Weak enforcement of existing environmental laws
- Low environmental awareness among managers of polluting agents
- Lack of environmental management skills
- Inadequate environmental legislation that is too comprehensive and strains the limited resources of enforcement agencies
- Limited resources for environmental investment due to the weakness of the Romanian economy
- Lack of market-based environmental policy instruments, particularly incentives to encourage environmental investments

## **C. Opportunities**

Romania is continuously improving its environmental legal framework and has a strategy to harmonize it in view of its intended accession to the European Union. In this effort, Romania receives valuable support from international donors, including USAID. A market-based approach is used to design, adapt, and enforce pollution charges.

NEAP's call for improving environmental policies, strengthening institutions, and enhancing priority investments has been implemented by domestic authorities with the support of foreign aid. The central government and local municipalities especially welcomed strengthening environmental institutions and facilitating environmental investments – areas in which EAPS was active.

## **D. Lessons of the EAPS Romania Experience**

### **D1. Relationship with Local Beneficiaries**

The EAPS program encouraged local beneficiaries to participate as partners. This helped them develop a sense of ownership and pride and a strong desire for success. Beneficiaries were consulted in the development of work plans, training materials, and other work products. Close consultation with MoWFEP and EPAs contributed to the success of EAPS' inspection and monitoring activities.

To provide sustainability, EAPS supported development of in-house capabilities, such as training MoWFEP/EPA staff as trainers. As project resources were insufficient for countrywide dissemination of the air quality monitoring training, MoWFEP commissioned the pilot EPAs to act as trainers for other local agencies.

A good relationship between the local USAID mission and the domestic authorities contributes to sound environmental project development.

EAPS fostered communication among Romanian subcontractors, industry, and consultants, government agencies, and public/private institutions.

### **D2. Use of Local Expertise**

EAPS relied extensively on locally contracted expertise in Romania. Our experience shows that a clear division of work, open cooperation, and firm management are the keys to success. EAPS encouraged cooperation among contractors while building local teams. Although Romanian subcontractors proved to be technically competent, most were unfamiliar with interdisciplinary teamwork. Romanian subcontractors were encouraged to practice client-oriented approaches rather than the customary "I am the expert, I know better" approach.

In every instance, using Romanian contractors expedited implementation and provided greater credibility to the project. When carefully selected, local subcontractors contribute their own prestige and contacts to the project. The reverse is also true in case of careless selection.

### **D3. The Environmental Consulting Market**

There are many environmental service providers in Romania. Most are privately owned, and most deal with the preparation of environmental materials balances required in the permitting process. However, not all are competent. Many consultants use "boilerplate" approaches and do not tailor their procedures to the client. Many lack pollution prevention and environmental management skills and knowledge. However, numerous training activities, financed by international donors, support the development of such skills. Most environmental management system (EMS) consultants are quality assurance/quality control (QA/QC) consultants trying to expand their market.

Local water consulting companies are strong, a side effect of water infrastructure investment projects under MUDP I and II (Municipal Utilities Development Projects) and ISPA.

One important issue having a negative impact on Romanian environmental consulting companies is arrears. Most consultants are struggling to survive in a rough business environment of high taxation, late payments, and more than 40 percent inflation.

International consulting companies are active in the market. These are either multinationals, such as KPMG and Louis Berger, or national European companies such as EPTISA, Cowi, Carl Bro, and Halcrow. As the cost of services provided by these consultants are prohibitive for Romanian companies, most of their activities are in the foreign assistance field. Foreign consultants rely on Romanian consultants primarily for data collection. There is little apparent interest among donors in developing local capabilities for environmental consulting.

## **ANNEX A**

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### **Summary of Projects**

#### **A. Copper Smelting Business Tour to the United States (December 1995)**

During the project start-up period, EAPS organized a business tour to the major U.S. copper producers for Romanian managers to increase their awareness of and receptivity to the most up-to-date technologies available. Participants included the managers of the two Romanian copper smelters, officials from the Ministry of Industries, and representatives of IMNR (now called IPRONEF, the Institute for Non-Ferrous Metallurgy), the consulting company providing services to both copper smelters. The Romanian team was joined by a Slovak team. The tour gave Romanian specialists an opportunity to witness the latest technologies at work and exchange impressions with the operators of various types of equipment. Participants described the tour as very useful for helping them make the right decisions in modernizing their plants.

#### **B. Investigation into Product Diversification and Equipment Modernization for Phoenix Copper Smelter (June-July 1996)**

Phoenix Copper Smelter had increased the capacity of its Outokumpu flash furnace, and managers were looking for low-cost alternatives to update the equipment downstream of the furnace. In this report, EAPS suggested alternatives to solve this problem and outlines possible ways of turning waste, such as sulfuric acid, into saleable products. A local contractor (IMNR) was subcontracted to prepare a short study on the possibility of reprocessing waste out of the waste pond.

Expatriate consultants: <sup>1</sup>	Richard Daniele, Dames & Moore Melvin Sharp
Romanian consultant: <sup>2</sup>	Corneliu Motoc, IMNR

#### **C. Investigation of Ways to Reduce Solid Waste and Control Pollution at the Romplumb Lead Smelter (June-July 1996)**

Romplumb had antiquated equipment and excess capacity. The plant had new end-of-pipe pollution control equipment, but the smelting process was wasteful and polluting. EAPS looked at different options and made suggestions for improvement. A local subcontractor (IMNR) was subcontracted to conduct a preliminary study on improving the pelletizing operation.

Expatriate consultants:	Richard Daniele, Dames & Moore Melvin Sharp
Romanian consultant:	Raluca Chiriacescu, IMNR

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<sup>1</sup> Included substantial additional effort by EAPS Chemonics staff.

<sup>2</sup> Included substantial additional effort by EAPS field-office staff.

#### **D. Acid Mist Ventilation at Rombat Battery Plant (August 1996-September 1998)**

Rombat battery plant doubled production between 1990 and 1996. A private, environmentally conscious plant, Rombat embarked on an ambitious revamping program. Ventilation in the battery charging shop is important both for process and occupational health and safety (OHS) reasons. This project report proposed various options to improve ventilation, reduce worker exposure to sulfuric acid mist, increase productivity, and improve the quality of batteries. As a follow-up to this report, EAPS and Rombat co-financed (50-50) purchase of an acid mist scrubber. Rombat installed the scrubber, and it paid for itself in less than one year.

Expatriate consultant: Michael Weiss

#### **E. Industrial Hygiene Air Monitoring Survey Training (July-October 1996)**

This project was part of the OHS component of EAPS in Romania. Following a preparatory trip, EAPS experts developed a list of OHS activities and a list of basic workplace air monitoring equipment required by participating non-ferrous metals plants. The equipment was delivered in October 1996 to the Center of Medical Research in Cluj-Napoca, Rombat Bistrita battery plant, Phoenix Baia Mare copper smelter, and Romplumb Baia Mare lead smelter following a training session at the Rombat battery plant.

Expatriate consultant: Cindy Becnel  
Romanian consultant:<sup>3</sup> Didi Surcel, Center for Medical Research

#### **F. Analysis of Ventilation System for Lead Dust Control at Rombat (September 1996)**

In support of the OHS demonstration project at Rombat, EAPS subcontracted a Romanian specialist, Dr. Victor Voicu, to assess the status and efficiency of the main lead dust control equipment. Dr. Voicu performed measurements and made recommendations for improvement.

Romanian consultant: Victor Voicu

#### **G. Resource Utilization and Waste Streams Evaluation at Rombat (September 1996)**

The project included a full assessment of processes and waste streams at Rombat. The project report contains recommendations for improving operations at the wastewater treatment plant, separation of waste streams, and other measures to reduce waste, optimize the use of resources, and monitor results. A list of available equipment is attached to the report. EAPS followed up by delivering a filter press and two stainless-steel pumps for the wastewater treatment plant (WWTP). This equipment was installed and helped turn the sludge generated by WWTP into a saleable product.

Expatriate consultants: Patricia Spaine  
Phillip Brown  
Romanian consultants:<sup>4</sup> Luminita Cruceanu, CAST-SA

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<sup>3</sup> Included substantial additional effort by EAPS field-office staff.

<sup>4</sup> Included substantial additional effort by EAPS field-office staff.

Cezar Macarie, CAST-SA

#### **H. Knowledge Attitudes and Practices (KAP) Studies at Rombat and Romplumb (August-October 1996)**

EAPS subcontracted an independent local expert, Dr. Alin Sinca, to conduct KAP studies at Rombat and Romplumb. Results of free group and individual discussions with the workers at both plants were used to write detailed reports, one for each plant. The reports were comprehensive, and plant managers described them as useful.

Romanian consultant: Alin Sinca

#### **I. Primary and Secondary Lead Smelting/Battery Manufacturing Business Tour (December 1996)**

EAPS organized a study tour to demonstrate state-of-the-art lead smelting and battery manufacturing/battery recycling processes and equipment to Romanian managers. The tour also demonstrated the environmental and occupational health concerns of U.S. industry managers. Participants included the managers of Romania's two lead smelters, two battery manufacturing companies, the Ministry of Industries, and IMNR, the consultant to all the lead smelters and battery manufacturing plants. The group visited major U.S. national and regional battery manufacturing/lead smelting and battery recycling companies. The study tour was a valuable demonstration tool that laid the groundwork for future process and OHS investments in participating plants.

#### **J. Health and Safety Plan for Reducing Lead Exposure (February 1997)**

EAPS provided training to the representatives of two lead smelters, two battery manufacturers, and Phoenix copper smelter in developing plans to reduce worker exposure to lead. Participants included industrial hygienists from the three *judets* in which the plants were located and the Center of Medical Research in Cluj-Napoca. The trainers were mainly Romanian specialists, including local specialists formerly participating in the USAID-financed Environmental Health Project in Alba Iulia and Zlatna. Two major protective equipment suppliers (3M and Drager) exhibited their products during the training.

Expatriate consultants: Cindy A. Becnel  
Barbara Menard

Romanian consultants:<sup>5</sup> Eugen Gurzau, Center for Medical Services  
Victor Voicu

#### **K. Institutional Needs Assessment for Environmental Protection Agencies in Romania (July 1997-January 1998)**

USAID/Romania requested preparation of this study, which was intended for use by USAID, by the World Bank in its Pollution Abatement Project, and by EU-Phare to develop future assistance projects. Both the World Bank and EU-Phare described the study as very well documented and

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<sup>5</sup> Included substantial additional effort by EAPS field-office staff.

informative. The study was also useful in developing capacity-strengthening activities under EAPS (see O and P below).

Expatriate consultants: <sup>6</sup>	Christine Bernardeau Jay Austin, Environmental Law Institute
Romanian consultants: <sup>7</sup>	Marilena Patrascu, Central and East European Environmental and Economic Policy project (C4EP) Mircea Dutu

#### **L. Development of Lead Exposure Reduction Programs (LERP) (February 1997 - February 1998)**

Following the OHS seminar organized by EAPS in February 1997, the two lead smelters, Rombat, Phoenix initiated work to design and implement LERPs in their plants. These industries worked without EAPS or expatriate assistance between February 1997 and February 1998. In February 1998, EAPS organized a seminar in which participating Romanian plants shared the lessons learned. The plans they had developed were impressive. Their reports were translated, published in a brochure, and disseminated to public health inspectorates, similar plants, and donors.

Expatriate consultant:	Cindy A. Becnel
Romanian consultant: <sup>8</sup>	Eugen Gurzau

#### **M. Upgrading Process Baghouses and Fugitive Dust Control Systems for Reduction of Lead Emissions (May 1998)**

This project took the research carried out by the Romanian ventilation expert, Dr. Victor Voicu, a step further. An expatriate ventilation expert visited Rombat and provided recommendations for improvement of the existing systems. Rombat found this report useful, as the plant was under pressure from the local environmental protection agency and the public to comply with newly enforced limits.

Expatriate consultant:	Michael Weiss
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#### **N. Lead Acid Battery Recycling, Prefeasibility Study (April-August 1998)**

EAPS conducted a prefeasibility study on battery recycling conditions in Romania. The research relied heavily on local resources. Three Romanian consultants were subcontracted: Ioan Buda, an independent lead smelting expert; Trend Consulting Group, a financial/economic consultant; and Electroproiect, consultants for battery manufacturing processes. The study considered various scenarios from 1998 to 2002. It was published and made available to private and state-owned stakeholders, both Rombat and Romplumb used it in their attempts to establish a battery recycling business. The study was also used by C4EP/EPIQ to help development specific economic instruments.

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<sup>6</sup> Included substantial additional effort by EAPS Chemonics staff.

<sup>7</sup> Included substantial additional effort by EAPS field-office staff.

<sup>8</sup> Included substantial additional effort by EAPS field-office staff.

Expatriate consultant: Michael Weiss  
 Romanian consultants:<sup>9</sup> Ioan Buda  
 George Plesoianu, Trend  
 Paul Claus, Trend  
 Suciu Vasile, Electroproiect  
 Ion Niculescu, Electroproiect

#### **O. Strengthening the Environmental Inspection Capabilities of the Romanian EPAs (October 1998 - January 2000)**

This activity was initiated as a follow-up to the Institutional Needs Assessment of the Romanian EPAs (INA). The old Romanian inspection procedure was upgraded, using U.S. Environmental Protection Agency guidelines as a model, adapted to local conditions. The proposed procedure was officially adopted by the Ministry of Waters, Forests, and Environmental Protection (MoWFEP) in May 2000. The procedure was developed mainly by Romanian consultants (EcoInd), in close cooperation with MoWFEP representatives, with support from a U.S. EPA inspector. The inspection manual was designed to comply with provisions of the Integrated Pollution Prevention and Control Directive, supporting Romania's legal harmonization with the European Union and eventual EU accession. Newly trained local trainers provided nationwide training to Romanian EPA inspectors.

Expatriate consultant: James Gallup  
 Romanian consultants:<sup>10</sup> Rodica Munteanu, EcoInd  
 Maura Teodorescu, EcoInd

#### **P. Strengthening the Air Quality Monitoring Capabilities of the Romanian EPAs (October 1998 - January 2000)**

This activity was initiated as a follow-up to the institutional needs assessment (INA) of the Romanian EPAs. The main focus was on introducing protocols for establishing emission inventories as an EPA activity. In May 2000, MoWFEP adopted the procedures and manual developed. The procedure incorporates both U.S. and EU inventories. The Romanian consultants subcontracted were Fitpol and ICIM..

Expatriate consultants: David Calkins  
 Barbara Austin Joy  
 Romanian consultants: Rodica Serban, Fitpol  
 Dan Eseanu, ICIM  
 Marilena Muntean, ICIM  
 Ion Moroianu, ICIM

<sup>9</sup> Included substantial additional effort by EAPS field-office staff.

<sup>10</sup> Included substantial additional effort by EAPS field-office and MoWFEP staff.



### **Q. Directory of Sources for Financing Environmental Investments in Romania (March-September 2000)**

This directory includes banks, foundations, international donors, leasing companies, etc., grouped in separate chapters. More than 2000 copies were printed and distributed, many in response to specific requests.

Romanian consultant: Rodica Furnica, environmental technical advisor to EAPS  
Romania

### **R. Application for ISPA Funds for an Integrated Waste Water Infrastructure Investment Project (March 2000-March 2001)**

EAPS prepared an application for European Union Instrument for Structural Policies for Pre-Accession (ISPA) program funds on behalf of Braila municipality. The ISPA management committee accepted the application on November 24, 2000. Following approval, EAPS financed the preparation of bidding documents for two of the three project components. EAPS also supported Braila's negotiations with the European Investment Bank (EIB) for a loan to finance the municipality's 25 percent contribution to project implementation costs. Romanian contractors included SETA, Proed, Prodomus, ICIM, Watertech, and Quantum Leap.

Expatriate consultant: Paul Dax  
Romanian consultants:<sup>11</sup> Gheorghe Moraru, SETA  
Mariana Balaban, SETA  
Raul Mitrache, Proed  
Virgil Mitu, Prodomus  
Calin Vasile, ICIM  
Mihai Stoian, Watertech  
Alex Hotnog, Quantum Leap  
Ionut Dobre, Quantum Leap  
Andreea Milea

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<sup>11</sup> Included substantial additional effort by EAPS field-office staff.

## ANNEX B

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### Publications

This list includes EAPS publications in English that may be of interest to others. It does not include the large number of highly specialized technical reports, usually not in English, produced with EAPS assistance in developing technical specifications, economic evaluations, and financing applications for specific environmental projects. Generally, these reports were not produced and distributed as formal EAPS publications.

<b>Title</b>	<b>Author(s)</b>	<b>Date</b>
Investigation into Product Diversification and Equipment Modernization for the Phoenix Copper Smelter	R. Daniele, M. Sharp	6/96
Investigation of Ways to Reduce Solid Waste and Control Pollution at the Romplumb Lead Smelter	R. Daniele, M. Sharp	6/96
Report on Acid Mist Ventilation, Rombat Battery Plant, Bistrita	M. Weiss	9/96
Industrial Hygiene Air Monitoring Survey Training	C. Becnel	12/96
Primary and Secondary Lead Smelter/Battery Manufacturing Business Tour Report	M. Weiss, R. Daniele	1/97
Rombat Battery Manufacturing Facility: Resource Utilization and Waste Streams Evaluation	P. Spaine	1/97
Analysis of Ventilation Systems for Lead Dust Control at Rombat, Bistrita, Romania	V. Voicu	1/97
Survey Report on Workers' Occupational Safety Knowledge, Attitudes, and Practices at Romplumb Plant, Baia Mare, Romania	A. Sinca	2/97
Health and Safety Plan for Reducing Lead Exposure, Workshop Report	C. Becnel, B. Menard	2/97
Institutional Needs Assessment for Environmental Protection Agencies in Romania	H. Koner, Various	1/98
Lead Exposure Reduction Program, Follow-Up Workshop Report	C. Becnel, L. Ionescu, R. Popovici	4/98
Upgrading Process Baghouses and Fugitive Dust Control Systems for Reduction of Lead Emissions: Rombat Battery Manufacturing Plant	M. Weiss	5/98
Romania Lead Acid Battery Recycling Program, Prefeasibility Study	M. Weiss	8/98
Final Technical Review of Training Materials for the Workshop on Emission Inventories and Dispersion Models	R. Serban et al., S.C. FITPOL S.R.L.	10/99
Environmental Regulatory Inspection Protocols, Air Quality Monitoring Manual and Protocols, and associated training materials [in Romanian]	EAPS field office and various	1-9/00
Application for ISPA funding for wastewater collector and treatment plant construction	EAPS field office, P. Dax, various	6/00
Directory of Sources for Financing Environmental Investments In Romania	EAPS field office	9/00

## ANNEX C

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### Contacts in Romania

Institution	Contact Person	Position	Contact Information
Rombat – Bistrita	Ioan Repede	General Manager	Tel: 063-250747 Fax: 063-250591 email: rombat@repede.tt
	Gelu Filipoiu	Technical Director	
Institute for Non-Ferrous Metallurgy (IPRONEF, formerly IMNR) – Bucharest	Ion Dragomir	General Manager	Tel: 2119490 Fax: 2110147 email: ipronef@pcnet.ro
Phoenix – Baia Mare	Victor Scarlat	Development Manager	Tel: 062-413863 Fax: 062-413802
Romplumb – Baia Mare	Liviu Dumitrean	Technical Director	Tel: 062-416860 Fax: 062-416863
Electroproiect – Bucharest	Vasile Suci	Director	Tel: 2112290 Fax: 2110298
Ecolnd (former ICPEAR) – Bucharest	Margareta Nicolau	General Manager	Tel: 4106716 Fax: 4100575 email: icpear@sunu.rnc.ro
Medical Center-Cluj – Napoca	Eugen Gurzau	Director	Tel: 064-432979 email: egurzau@usa.net Tel: 6131720
	Victor Voicu	Ventilation expert	
	Alin Sinca	KAP expert	
Institute for Environmental Engineering (ICIM)	Corneliu Negulescu	Director	Tel/Fax: 2215770 email: icim@sunu.rnc.ro
FITPOL	Alexandru Fiti	General Manager	Tel: 2219124 Fax: 2219126 email: fitpol@mb.roknet.ro
SETA	Gheorghe Moraru	General Manager	Tel: 2114177 Fax: 2113220 email: seta@fx.ro
Proed	Alexandru Gheorghiu	Technical Director	Tel: 2115510 Fax: 2101801 email: proed@fx.ro
Prodomus	Nicolae Mitroi	General Manager	Tel: 039-618253 Fax: 039-616456
Watertech	Mihai Stoian	Manager	Tel/Fax: 2123606 email: watertech@fx.ro
Quantum Leap	Alex Hotnog	President	Tel: 092-598554
	Andreea Milea	Financial specialist	